

## Appendix A

### Kentucky's NO<sub>x</sub> SIP Call Regulations

~~401 KAR 51:001. Definitions for 401 KAR Chapter 51.~~

~~401 KAR 51:160. NO<sub>x</sub> requirements for large utility and industrial boilers.~~

~~401 KAR 51:170. NO<sub>x</sub> requirements for cement kilns.~~

~~401 KAR 51:180. NO<sub>x</sub> credits for early reduction and emergency.~~

~~401 KAR 51:190. Banking and trading NO<sub>x</sub> allowances.~~

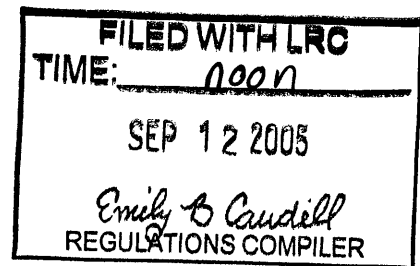
~~401 KAR 51:195. NO<sub>x</sub> opt-in provisions.~~

*(Note: 401 KAR 51:200 Regional NO<sub>x</sub> emission requirements was inadvertently listed and submitted in the October 10, 2001, submittal, and is not part of Kentucky's NO<sub>x</sub> SIP Call SIP revision. Furthermore, this regulation is to be repealed since its purpose (i.e., the Louisville attainment demonstration) is no longer relevant with the redesignation of the Louisville area to attainment.)*

**401 KAR 51:150. NO<sub>x</sub> requirements for stationary internal combustion engines. (Proposed adoption)**

**401 KAR 51:160. NO<sub>x</sub> requirements for large utility and industrial boilers. (Proposed amendment)**

**Adoption of 401 KAR 51:150. NO<sub>x</sub> requirements for stationary internal combustion engines.**



1 ENVIRONMENTAL AND PUBLIC PROTECTION CABINET

2 Department for Environmental Protection

3 Division for Air Quality

4 (New Administrative Regulation)

5 401 KAR 51:150. NOx requirements for stationary internal combustion engines.

6 RELATES TO: KRS 224.10-100, 224.20-100, 224.20-110, 224.20-120, 40 C.F.R.  
7 51.121, 51.122, 40 C.F.R. 78, 97, 42 U.S.C. 7401-7671q

8 STATUTORY AUTHORITY: KRS 224.10-100(5), 224.20-100, 224.20-110, 224.20-  
9 120, 42 U.S.C. 7401-7671q

10 NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100(5) requires the  
11 Environmental and Public Protection Cabinet to promulgate administrative regulations  
12 for the prevention, abatement, and control of air pollution. Pursuant to the federal NOx  
13 SIP Call, this administrative regulation provides for the regional control of nitrogen  
14 oxides (NOx) emissions by establishing requirements for large stationary internal  
15 combustion engines. This administrative regulation is not more stringent than the  
16 federal mandate.

17 Section 1. Definitions. (1) "Affected engine" means any stationary internal  
18 combustion engine that is:

19 (a) A Large NOx SIP Call Engine; or

20 (b) Another stationary internal combustion engine that is subject to NOx control  
21 under a compliance plan pursuant to this administrative regulation.

1 (2) "Facility seasonal NOx 2007 tonnage reduction" means the total of the engine  
2 seasonal NOx 2007 tonnage reductions attributable to all large NOx SIP Call engines of  
3 an owner or operator.

4 (3) "Large NOx SIP Call Engine" means a stationary internal combustion engine  
5 identified and designated in the NOx SIP Call engine inventory as emitting more than  
6 one (1) ton of NOx per average ozone season day in 1997.

7 (4) "NOx potential to emit" means the maximum capacity of an engine to emit NOx  
8 under its physical and operational design or applicable permit condition for a given  
9 period of time. Any physical limitation on the capacity of a source's potential to emit an  
10 air pollutant, including air pollution control equipment or combustion modification, shall  
11 be treated as part of its design if the limitation is enforceable by the cabinet.

12 (5) "NOx SIP Call baseline period" or "baseline period" means the period beginning  
13 May 1, 1997, and ending September 30, 1997, inclusive.

14 (6) "NOx SIP Call baseline period utilization" means the amount of work performed  
15 by a NOx SIP Call engine during the baseline period in brake horsepower-hours (bhp-  
16 hr).

17 (7) "NOx SIP Call engine inventory" means the NOx emission inventory, compiled by  
18 the U.S. EPA, that includes:

19 (a) Technical amendments pursuant to 65 Fed. Reg. 11222, March 2, 2000; and

20 (b) The adjustment of the 2007 budget NOx control efficiency to eighty-two (82)  
21 percent for large gas-fired engines pursuant to 69 Fed. Reg. 21603, April 21, 2004.

22 (8) "Past NOx emission rate" means the emission rate of an affected engine in  
23 grams per brake horsepower-hour (g/bhp-hr), as determined by performance testing

1 consistent with the requirements of 40 C.F.R. Part 60, Appendix A. If such performance  
2 test data are not available, the rate:

3 (a) Shall be the uncontrolled emission rate for Large NOx SIP Call Engines; or

4 (b) Shall be determined by the cabinet on a case-by-case basis, using appropriate  
5 emission factors or data from the NOx SIP Call engine inventory.

6 (9) "Projected 2007 NOx tonnage reduction" means the projected NOx reduction in  
7 tons during the 2007 control period, calculated as the difference between the 2007 base  
8 emissions and the 2007 budget emissions. The Projected 2007 NOx tonnage reduction  
9 may be corrected through an approved SIP revision.

10 (10) "Projected 2007 seasonal base NOx emissions" or "2007 base emissions"  
11 means the projected uncontrolled NOx emissions, in tons, for the 2007 control period as  
12 published in the NOx SIP Call Inventory. The 2007 base emissions may be  
13 recalculated through an approved SIP revision.

14 (11) "Projected 2007 seasonal budget NOx emissions" or "2007 budget emissions"  
15 means the projected controlled NOx emissions in tons, for the 2007 control period as  
16 published in the NOx SIP Call Inventory. The 2007 budget emissions may be  
17 recalculated through an approved SIP revision.

18 (12) "Projected 2007 Ozone Season utilization" or "2007 utilization" means the  
19 projected amount of work during the 2007 control period performed by a NOx SIP Call  
20 engine, calculated as the 1997 baseline utilization multiplied by the growth factor  
21 assigned to that engine in the NOx SIP Call Inventory.

22 (13) "Projected NOx emission rate" means the projected emission rate in grams per  
23 brake horsepower-hour after installation of controls on an affected engine.

1       (14) "Projected operating hours" means the projected actual number of hours of  
2 operation per ozone season for an affected engine.

3       (15) "Stationary internal combustion engine" means any internal combustion engine  
4 of the reciprocating type that is either attached to a foundation at a facility or is designed  
5 to be capable of being carried or moved from one location to another and remains at a  
6 single site at a building, structure, facility, or installation for more than twelve (12)  
7 consecutive months. Any engine or engines that replace an engine at a site that is  
8 intended to perform the same or similar function as the engine replaced shall be  
9 included in calculating the consecutive time period.

10       Section 2. Applicability. This administrative regulation shall apply to the owner or  
11 operator of any Large NOx SIP Call Engine.

12       Section 3. Standard for Large NOx SIP Call Engines. On and after May 1, 2007,  
13 an owner or operator of an affected engine shall not operate the engine during a control  
14 period unless:

15       (1) The NOx emission rate for a Large NOx SIP Call Engine is reduced from the  
16 Past NOx emission rate by at least eighty two (82) percent; or

17       (2) The owner or operator complies with the requirements in Section 4 of this  
18 administrative regulation.

19       Section 4. Compliance Plan. On and after May 1, 2007, an owner or operator shall  
20 not operate a Large NOx SIP Call Engine during the control period unless the owner or  
21 operator complies with the requirements of a compliance plan or reduces NOx  
22 emissions from that engine accordance with Section 3(1).

23       (1) The compliance plan shall:

1 (a) Be approved by the cabinet;

2 (b) Include all affected engines at an individual facility, several facilities, or at all  
3 facilities located in Kentucky that are under the control of the same owner or operator;

4 (c) Be submitted to the cabinet by May 1, 2006;

5 (d) Include credit for decreases in NOx emissions from Large NOx SIP Call Engines  
6 in Kentucky due to NOx control equipment. The owner or operator shall also include  
7 credit for decreases in NOx emissions from other affected engines in Kentucky due to  
8 NOx control equipment that is not reflected in the 2007 Ozone Season Base NOx  
9 Emissions in the NOx SIP Call Engine Inventory; and

10 (e) Provide the following information for each affected engine:

11 1. A list of engines subject to the plan that includes:

12 a. Engine manufacturer,

13 b. Engine model number,

14 c. Facility location address, and

15 d. Facility identification number;

16 2. The projected ozone season hours of operation and supporting documentation;

17 3. A description of the NOx emissions control installed, or to be installed, and  
18 documentation to support the Projected NOx Emission Rates;

19 4. The Past and Projected NOx Emission Rates in grams per brake horsepower-  
20 hour;

21 5. A numerical demonstration that the emission reductions obtained from all  
22 engines included in the compliance plan will be equivalent to or greater than the owner  
23 or operator's Facility Seasonal NOx 2007 Tonnage Reduction, based on the difference

1 between the Past NOx Emission Rate and the Projected NOx Emission Rate, multiplied  
2 by the Projected Operating Hours for each affected engine, and considering credit  
3 according to paragraph (d) of subsection (1); and

4 6. Provisions for monitoring, reporting and recordkeeping.

5 (2) The Projected NOx Emission Rate in grams per brake horsepower-hour for each  
6 affected engine shall be included in a federally-enforceable permit.

7 Section 5. Compliance Demonstration.

8 (1) Pursuant to the compliance plan required in Section 4, NOx emission reductions  
9 shall be calculated according to the following criteria:

10 (a) For a Large NOx SIP Call Engine to which a control device is added or a  
11 combustion modification is made after September 30, 1997, the NOx emission  
12 reductions shall equal the difference, in tons, between the affected engine's projected  
13 2007 base emissions and the affected engine's seasonal potential to emit at the  
14 controlled emission rate during the control period.

15 (b) For an affected engine that is removed from service after September 30, 1997,  
16 and the facility's operating capacity, in brake horsepower-hours, equivalent to the  
17 removed affected engine's projected utilization is replaced, in part or in total, during a  
18 control period:

19 1. By a NOx emitting device installed after September 30, 1997, the NOx emission  
20 reductions shall be the difference, in tons, between the removed affected engine's  
21 projected 2007 base emissions and the replacement device's seasonal potential to emit  
22 for the operating capacity, in brake horsepower-hours, equivalent to the portion of the



1 removed affected engine's projected utilization that the device will replace, not to  
2 exceed one hundred (100) percent; or

3 2. By a device that does not emit NOx installed after September 30, 1997, the NOx  
4 emission reductions shall be the removed affected engine's projected 2007 base  
5 emissions, multiplied by the percentage projected from utilization of the replacement  
6 device, not to exceed one hundred (100) percent; or

7 3. By a device that does not emit NOx, and a NOx emitting device is installed at the  
8 removed affected engine's facility after the date that the device that does not emit NOx  
9 was installed, the NOx emission reductions shall be the difference, in tons, between the  
10 removed affected engine's projected 2007 base emissions, and the NOx emitting  
11 device's seasonal potential to emit for its operating capacity, in tons, equivalent to the  
12 portion of the removed affected engine's projected utilization that it will replace, not to  
13 exceed one hundred (100) percent.

14 (2) The following shall not be considered NOx emission reductions for compliance  
15 with this administrative regulation:

16 (a) A restriction on an affected engine's hours of operation during a control period,  
17 including a prohibition from operating;

18 (b) A NOx emission limitation enforceable by the cabinet placed upon an affected  
19 engine to which no control device was added or combustion modification made after  
20 September 30, 1997;

21 (c) The removal of an affected engine from service if that affected engine is placed  
22 into service at another location within Kentucky; or

1 (d) NOx emission reductions achieved at a facility that is not owned or operated by  
2 the person responsible for demonstrating compliance with this administrative regulation.

3 (3) Demonstrability and enforceability of NOx emission reductions.

4 (a) NOx emission reductions, calculated in accordance with Section 5(1)(a) or (b),  
5 shall be demonstrable and enforceable if:

6 1. An hourly NOx emission limitation unit, grams per brake horsepower-hours, is  
7 included in a permit enforceable by the cabinet for the affected engine or replacement  
8 device that is to be operated during a control period;

9 2. The hourly NOx emission limitation is equal to the hourly emission rate used to  
10 calculate the NOx potential to emit for the affected engine or replacement device in the  
11 compliance plan; and

12 3. A performance test conducted in accordance with Section 6 of this administrative  
13 regulation determines that the affected engine or the replacement device is capable of  
14 complying with the hourly NOx emission limitation.

15 (b) For any affected engine removed from service, NOx emission reductions  
16 calculated in accordance with Section 5(1)(b) shall be demonstrable and enforceable if  
17 the applicable permit has been modified or revoked, so that the affected engine's  
18 authorization to operate ceases on or before the first day of the control period for which  
19 NOx emission reductions would be credited.

20 (4) NOx emission reductions achieved to comply with this administrative regulation  
21 shall not be considered creditable for compliance with any other applicable requirement  
22 and shall not be considered a contemporaneous emission decrease for the purposes of  
23 netting or offsets.

1       Section 6. Monitoring Requirements. An owner or operator of an affected engine  
2 shall:

3       (1) Complete an initial performance test according to the requirements codified in  
4 Appendix A to 40 C.F.R. Part 60, following the installation of emission controls required  
5 to achieve the emissions limit in Section 3(1) of this administrative regulation.

6       (2) Perform periodic monitoring to yield reliable data from the relevant time period  
7 that is representative of a source's compliance with the emissions limit in Section 3(1) of  
8 this administrative regulation. Periodic monitoring shall include either:

9       (a) Performance tests consistent with the requirements of Appendix A to 40 C.F.R.  
10 Part 60, or portable monitors using *ASTM D6522-00*, incorporated by reference in  
11 Section 9 of this administrative regulation;

12       (b) A parametric monitoring program that specifies operating parameters, and their  
13 ranges, that will provide that each affected engine's emissions are consistent with the  
14 provisions of Section 3 of this administrative regulation;

15       (c) A predictive emissions measurement system that relies on automated data  
16 collection from instruments; or

17       (d) A continuous emission monitoring system that complies with 40 C.F.R. Part 60 or  
18 Part 75.

19       Section 7. Recordkeeping Requirements. An owner or operator subject to this  
20 administrative regulation shall:

21       (1) Maintain all records necessary to demonstrate compliance with the provisions of  
22 this administrative regulation for a period of two (2) calendar years where the affected

1 engine is located, and provide the records, upon request, to the cabinet and the U.S.  
2 EPA.

3 (2) Maintain the following records for each affected engine:

4 (a) Identification and location of each affected engine;

5 (b) Calendar date of record;

6 (c) Number of hours the affected engine is operated during each control period  
7 compared to the Projected Operating Hours;

8 (d) Type and quantity of fuel used; and

9 (e) Results of all compliance tests.

10 Section 8. Reporting Requirements. An owner or operator subject to the provisions  
11 of this administrative regulation shall submit the required reports, compliance plans and  
12 compliance test results to:

13 (1) Manager, Permit Review Branch, Kentucky Division for Air Quality, 803 Schenkel  
14 Lane, Frankfort, Kentucky 40601, (502) 573-3382; and

15 (2) The appropriate Regional Office of the Division for Air Quality as follows:

16 (a) Ashland Regional Office, 1550 Wolohan Drive, Suite 1, Ashland, Kentucky  
17 41102, (606) 929-5285;

18 (b) Bowling Green Regional Office, 1508 Westen Avenue, Bowling Green, Kentucky  
19 42104, (270) 746-7475;

20 (c) Florence Regional Office, 8020 Veterans Memorial Drive, Suite 110, Florence,  
21 Kentucky 41042, (859) 525-4923;

22 (d) Hazard Regional Office, 233 Birch Street, Suite 2, Hazard, Kentucky 41701,  
23 (606) 435-6022;

1 (e) London Regional Office, 875 South Main Street, London, Kentucky 40741, (606)  
2 878-0157;

3 (f) Owensboro Regional Office, 3032 Alvey Park Drive, W., Suite 700, Owensboro,  
4 Kentucky 42303, (270) 687-7304; or

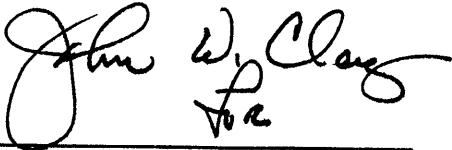
5 (g) Paducah Regional Office, 130 Eagle Nest Drive, Paducah, Kentucky 42003,  
6 (270) 898-8468.

7 Section 9. Incorporation by Reference. (1) The following material is incorporated by  
8 reference: "ASTM D6522-00, Standard Test Method for Determination of Nitrogen  
9 Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-  
10 Fired Reciprocating Engines, Combustion Turbines, Boilers, and process Heaters Using  
11 Portable Analyzers<sup>1</sup>, Book of ASTM Standards, February 10, 2000 and April 2000."

12 (2) This material may be inspected, copied, or obtained, subject to applicable  
13 copyright law, at the Division for Air Quality, 803 Schenkel Lane, Frankfort, Kentucky,  
14 40601, (502) 573-3382, Monday through Friday, 8 a.m. to 4:30 p.m.

15 (3) Copies are available for sale from the American Society for Testing and  
16 Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania, 19428-2959,  
17 telephone (610) 832-9585, facsimile (610) 832-9555, and the Internet  
18 <http://www.astm.org/>.

9-9-2005  
Date

  
LaJuana S. Wilcher, Secretary  
Environmental and Public  
Protection Cabinet

**PUBLIC HEARING AND PUBLIC COMMENT PERIOD:** A public hearing on this administrative regulation shall be held on October 21, 2005, at 10:00 a.m. (local time) in the Conference Room of the Division for Air Quality at 803 Schenkel Lane, Frankfort, Kentucky. Individuals interested in being heard at this hearing shall notify this agency in writing five (5) workdays prior to the hearing, of their intent to attend.

This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation.

If you do not wish to be heard at the hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted until October 31, 2005. Send written notification of intent to be heard at the hearing or written comments on the proposed administrative regulation to the contact person.

The hearing facility is accessible to persons with disabilities. Requests for reasonable accommodations, including auxiliary aids and services necessary to participate in the hearing, may be made to the contact person at least five (5) workdays prior to the hearing.

**CONTACT PERSON:** Gerry Ennis, Environmental Technologist III, Division for Air Quality, 803 Schenkel Lane, Frankfort, Kentucky 40601, telephone number (502) 573-3382, facsimile number (502) 573-3787, and electronic mail: [gerry.ennis@ky.gov](mailto:gerry.ennis@ky.gov).

## REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

**Contact Person:** Gerry Ennis

**(1) Provide a brief summary of:**

**(a) What this administrative regulation does:** This administrative regulation establishes the requirements for the control of nitrogen oxides (NOx) emissions from any stationary internal combustion engine that is a large NOx SIP Call engine or other stationary internal combustion engine that is subject to NOx control under a compliance plan.

**(b) The necessity of this administrative regulation:** This administrative regulation is necessary to comply with the requirements of KRS 224.10-100 and the federal NOx SIP Call which requires Alabama, Connecticut, Delaware, Illinois, Indiana, Kentucky, Massachusetts, Maryland, Michigan, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia and West Virginia, to control NOx emissions to alleviate violations of the federal ozone NAAQS in downwind states.

**(c) How this administrative regulation conforms to the content of the authorizing statutes:** KRS 224.10-100(5) requires the cabinet to promulgate administrative regulations for the prevention, abatement, and control of air pollution. This regulation is proposed in order to reduce the regional transport of NOx emissions.

**(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes:** This administrative regulation will reduce NOx emissions resulting in the protection of human health and the environment.

**(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:**

**(a) How the amendment will change this existing administrative regulation:** This administrative regulation does not amend any existing administrative regulation.

**(b) The necessity of the amendment to this administrative regulation:** This administrative regulation does not amend any existing administrative regulation.

**(c) How the amendment conforms to the content of the authorizing statutes:** This administrative regulation does not amend any existing administrative regulation.

**(d) How the amendment will assist in the effective administration of statutes:** This administrative regulation does not amend any existing administrative regulation.

**(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation.** Ten (10) units at six (6) Kentucky facilities are listed as large stationary internal combustion engines in the NOx SIP Call Inventory and are affected by this administrative regulation.

**(4) Provide an assessment of how the above group or groups will be impacted by either the implementation of this administrative regulation, if new, or by the change if it is an amendment:** This administrative regulation establishes the NOx emission requirements for any stationary internal combustion engine that is a large



NOx SIP Call engine or other stationary internal combustion engine that is subject to NOx control under a compliance plan.

- (5) Provide an estimate of how much it will cost to implement this administrative regulation:**
- (a) Initially:** The cabinet will not incur any additional costs for the implementation of this administrative regulation.
  - (b) On a continuing basis:** There will not be any continuing costs for the implementation of this administrative regulation.
- (6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation:** The cabinet's current operating budget will be used for the implementation and enforcement of this administrative regulation.
- (7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment.** No increase in fees or funding is necessary to implement the proposed administrative regulation.
- (8) State whether or not this administrative regulation establishes any fees or directly or indirectly increases any fees.** This administrative regulation does not establish, nor does it directly or indirectly increase any fees.
- (9) TIERING: Is tiering applied?** No.

## **FEDERAL MANDATE ANALYSIS COMPARISON**

- 1. Federal statute or regulation constituting the federal mandate.**  
On April 21, 2004, Phase II of the federal NOx SIP Call was published in the Federal Register (69 FR 21604). The Phase II revisions include standards for controlling NOx emissions from stationary internal combustion engines subject to emission limitations or NOx control under a compliance plan.
- 2. State compliance standards.** The state compliance standards are found in KRS 224.10-100(5).
- 3. Minimum or uniform standards contained in the federal mandate.** The federal regulations require large stationary internal combustion engines to reduce NOx emissions by eighty-two percent (82%).
- 4. Will this administrative regulation impose stricter requirements, or additional or different responsibilities or requirements, than those required by the federal mandate?** No.
- 5. Justification for the imposition of the stricter standard, or additional or different responsibilities or requirements.** This administrative regulation will not impose stricter standards, or additional or different responsibilities or requirements than those required by the federal mandate.

Summary of Material  
Incorporated by Reference  
401 KAR 51:150

ASTM D 6522-00, Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and process Heaters Using Portable Analyzers<sup>1</sup>, as published in the Book of ASTM Standards, February 10, 2000 and April 2000, is incorporated by reference.

Revisions to Phase II of the NO<sub>x</sub> SIP Call, published in the *Federal Register* (69 Fed. Reg. 21604, April 21, 2004), requires regional control of NO<sub>x</sub> emissions and provides standards for large stationary internal combustion engines.

Implementing these standards will require no additional state funding. The material incorporated by reference consists of 9 pages in one volume and contains the following:

1. Scope
  2. Referenced Documents
  3. Terminology
  4. Summary of Test Method
  5. Significance and Use
  6. Interferences
  7. Apparatus
  8. Reagents and Materials
  9. Preparation of Apparatus
  10. Procedure
  11. Calculation
  12. Report
  13. Precision and Bias
  14. Keywords
- Bibliography